USSR

BOGDANKEVICH, L. S, RUKHADZE, A. A., Zhurnal Tekhnicheskoy Fiziki, Vol 40, No 1, Jan 70, pp 10-17

with a density of $N \sim 10^{10}$-10^{11} cm^{-3} and a temperature $T_e \sim 10$-20 ev. Two cyclotron waves were excited in the waveguide: one absorbed at the wavelength $L_e \sim 1.5$ cm and the second at the wavelength $L_0 \sim 6$ cm. According to the theory developed here, values for L_e are approximately 0.5 cm and $L_0 \sim 5$-6 cm, so there is good agreement with the values observed experimentally.

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Acc. Nr: AT0050501 —Abstracting Service: NUCLEAR SCI. ABST.   Ref. Code: UR 0141

17937   TO THE THEORY OF INTERACTION BETWEEN A
RELATIVISTIC ELECTRON BEAM AND PLASMA. Bogdankevich,
L. S.; Zhelyazkov, I. I.; Rukhadze, A. A. (Lebedev Inst. of
Physics, Moscow). Izv. Vyssh. Ucheb. Zaved., Radiofiz.; 13:
21-7(1970). (In Russian).

The interaction between the limited relativistic electron beam
of a small density and plasma being in a strong longitudinal mag-
netic field is investigated. The critical plasma density, above
which the electrostatic instabilities may be developed, is deter-
mined. In long enough systems, the critical density of plasma is
increased with the growth of its density reaching some value de-
termined by the directed velocity of electrons and the geometrical
dimensions of the system. In the systems limited in a longitudinal
direction, the critical density of plasma may be dependent also on
the system length and magnetic field intensity. In this case the
critical density is larger than for a long system. It follows from
the analysis of the stability that the maximum current of the elec-
tron beam, which may be passed through the waveguide, increases
in the relativistic region with the growth of the electron energy as
ϵ^3. Due to this possibility, large currents may penetrate through
a dense plasma. (auth)

REEL/FRAME
19810484

ROSINSKIY, S. Ye., RUKHADZE, A. A., RUKHLIN, V. G., EPEL'BAUM, Ya. G.,
Physics Institute imeni P. N. Lebedev, Academy of Sciences of the USSR,
Moscow

"Injection of an Electron Beam Into a Plasma Contained by a Conductive
Shell"

Abstract: One of the most interesting effects which arises as a result of
injecting electron beams into a plasma is magnetic neutralization of the
beam due to induction of a plasma countercurrent. It is this effect which
enables transmission of superhigh currents through a drift space filled
with plasma. This paper investigates injection of a radially nonuniform
electron beam into a plasma contained by a conductive shell. It is found
that the perturbation of charge density is the same as in an unbounded
plasma. The fields and currents induced by the beam in the plasma con-
tained by an ideally conductive shell are not qualitatively different from
the fields and currents which arise in an unbounded plasma. An ideally
conducting shell does not cause any appreciable decompensation of the fields

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and currents in the plasma but only changes the quantitative data pre-
viously found for the case of an unbounded plasma. Thus, the spatial non-
uniformity of the beam induces a plasma countercurrent which partially
compensates for the magnetic field of the current throughout the entire
cross section of the beam. The authors thank D. D. Ryutov for discussing
the results of the work.

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USSR

KIKVIDZE, R. R.; KOTETISHVILI, V. G.; RUKHADZE, A. A. (Lebedev Physics Institute of the USSR Academy of Sciences, Moscow)

"Radiation Yield of a Solid-State Plasma during the Development of Beam Instability"

ABSTRACT: The possibility of the generation and amplification of electromagnetic waves by means of an electron beam passing through a cylindrical slit in a solid is studied. It is shown that potential oscillations in such a system, studied earlier, are natural, with an accuracy up to the terms $v_0/c \ll 1$. One of the modes of quasi-longitudinal oscillations has a maximum increment. The Umov-Poynting vector, connected with this mode, and the efficiency factor of the transformation of energy of the beam into energy of transverse electromagnetic radiation are found. At the same time, nonlinear theory is used to determine the amplitude of the steady-state oscillation. A definite advantage of the perturbation of surface over spatial oscillations is indicated.
    The article includes 19 equations. There are four references.

1/1

RUKHADZE, A.A.

THE POSSIBILITY OF BUILDING PULSED ELECTRON ACCELERATORS WITH ENERGIES OF 20 TO 50 MEV

[Article by G. P. Mkheidze, M. D. Raizer, M. S. Rabinovich, and A. A. Rukhadze; Moscow, Kratkiye Soobshcheniya po Fizike, Russian, No. 3, March 1972, pp 67-74]

1. Progress of high-voltage pulsed equipment has permitted in the last decade substantially elevating the parameters of electron accelerators. Beams with a total energy of several megajoules and a power of 10^{13} to 10^{14} watts per pulse are now becoming realistic. The realization of such energies and powers in electron beams opens up the prospect of their use to heat solid targets to thermonuclear temperatures [1], investigate phase transformations and obtain new materials [2], the beams are finding applications in investigating the effect of radiation on materials and equipment [3], for turbulent heating of plasma [4], the electronic pumping of lasers [5], as an injector for accelerators, to accomplish collective methods of ion acceleration [6], etc.

The development of electron accelerators is characterized basically by a tendency to increase the beam current [7-15] (Table 1). At the same time, electron beams with somewhat smaller currents (to 100 kiloamperes), but with an electron energy in the range of 20-50 MeV, are extremely interesting for plasma and quantum electronics and nuclear physics. Such accelerators would find application for the creation of powerful plasma generators and accelerators of electromagnetic radiation of the centimeter range, based on the collective interaction of the electron beam with plasma, which is very effectively manifested at ultrarelativistic electron energies. The high efficiency of conversion of the beam energy into radiative energy, which at the indicated beam parameters can reach 10-30%, and the relativistic narrowness of the lines of generation of the order of $10^{-3} - 10^{-4}$, make such systems very promising.

- 1 -

[I - USSR - 2]

USSR

UDC: 681.3.02

RUKHADZE, A. K., ABDUSHELISHVILI, G. T., GOGOLADZE, O. V.

"System of Commands for a Compact Control Computer"

Tr. Gruz. politekhn. in-t (Works of Georgian Polytechnical Institute),
1970, No 4(139), pp 101-109 (from RZh-Matematika, No 11, Nov 71, Abstract
No 11V777)

Translation: A system of commands is presented for the small M-1 000
control computer being developed at the Tbilisi Scientific Research In-
stitute of Instrument Building and Automation Facilities. It is noted
that the M-1 000 can play the part of a channel in an aggregate system of
computer facilities or can be used separately as a small control com-
puter. V. Mikheyev.

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USSR   UDC: 661.3.02

RUKHADZE, A. K., ABDUSHELISHVILI, G. T., GOGOLADZE, O. V.

"A System of Commands for a Compact Controller"

Tr. Gruz. politekhn. in-t (Works of the Georgian Polytechnical Institute),
1970, No 4(139), pp 101-109 (from RZh-Kibernetika, No 11, Nov 71, Abstract
No 11V777)

Translation: The paper presents a system of commands for the M-1000
miniature control computer. The system was developed at the Tbilisi
Scientific Research Institute of Instrument Building and Means of Auto-
mation. It is noted that the M-1000 may act as a channel in an aggregate
system of computer facilities, while it may be used separately as a minia-
ture controller. V. Mikheyev.

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USSR

UDC 615.373.036.8:615.373.012.6

RUKHADZE, E. Z., Moscow Institute of Epidemiology and Microbiology

"Lytic Antibodies in Antibacterial Sera. III. Competitive Interaction Between Bacteriolytic Antibodies of Different Immunochemical Types"

Abstract: Hyperimmune sera were obtained from rabbits intravenously inoculated with alcohol-acetone vaccine from S. typhimurium. The IgM and IgG antibodies were separated by fractionation in columns with DEAE cellulose. At high concentrations, both antibodies were found to inhibit their own lytic action, but at optimal concentrations they caused a high degree of bacteriolysis. Competition developed between the antibodies in the bactericidal reaction when either or both were in excess, with the excess IgG or IgM antibodies serving as the inhibitory factor. In some cases mutual competition occurred (when the total concentration of the antibodies was close to being excessive). Competition between antibodies of different immunochemical types probably has mechanisms in common with the phenomena that develop after the appearance of a zone of inhibition of bacteriolysis caused by an excess of antibodies of a single type.
1/1

1/2   024
UNCLASSIFIED
TITLE--SPECIFICITY OF SEROLOGICAL REACTIONS BASED ON SERUM BACTERICIDITY
PROCESSING DATE--02OCT70
-U-
AUTHOR-(05)-RUKHADZE, E.Z., LEVI, M.I., TENDETNIK, YU.YA., PRYAMUKHINA,
N.S., VYDRINA, YE.I.
COUNTRY OF INFO--USSR

SOURCE--ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, 1970, NR 3,
PP 63-68
DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SEROLOGIC TEST, DYSENTERY, TYPHOID FEVER ANTIGEN, SALMONELLA
TYPHIMURIUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1990/1487
STEP NO--UR/0016/70/000/003/0063/0068
CIRC ACCESSION NO--AP0109547
UNCLASSIFIED

CIRC ACCESSION NO--AP0109547   UNCLASSIFIED   PROCESSING DATE--02OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SPECIFICITY OF BACTERIOLYSIS REACTION WAS STUDIED ON A MODEL OF THE CAUSATIVE AGENTS OF DYSENTERY, TYPHOID FEVER AND TYPHIMURIUM. REACTIONS OF BACTERIOLYSIS AND OF BACTERIOLYSIN NEUTRALIZATION WERE DESCRIBED. SPECIFICITY OF BACTERIOLYSIS PHENOMENON WAS DEMONSTRATED BY THE REACTION OF BACTERIOLYSINS, WHEREAS REACTION OF BACTERIOLYSIN NEUTRALIZATION CAN BE RECOMMENDED FOR DETECTION OF SMALL AMOUNTS OF COMPLETE ANTIGENS OF VARIOUS BACTERIA.

UNCLASSIFIED

RUKHADZE, V.A.

(

AUTHORS: Kenigsberg, V.L., and Rukhadze, V.A.   SOV/19-58-7-256/392

TITLE: Device for Protecting Differential Manometers from
                Overload at Pressures Above the Permissible (Ustroyst-
                vo dlya zashchity differentsial·nykh manometrov ot pe-
                regruzok pri uvelichenii davleniya vyshe dopustimogo)

PERIODICAL: Byulleten' izobreteniy, 1958, Nr 7, p 59 (USSR)

ABSTRACT: Class 42k, 13. Nr 114225 (587401 of 6 December
                1957). The instrument housing is hermetically di-
                vided into two cavities, each of which includes three
                chambers interconnected by valves; one of the valves
                is normally closed and mounted in the membrane par-
                tition wall; it serves to close both cavities of the
                manometer; the other valve is normally open and mount-
                ed in the rigid partition wall.

Card 1/1

USSR

CHAVCHANIDZE, V. V., and RUKHADZE, V. A., Institute of Cybernetics, Academy
of Sciences Georgian SSR

UDC 681.3.01:681.325.65

"A NOT-OR Element"

USSR Author's Certificate No 263207, Filed 10 Oct 68, Published 5 Jan 71
(from Referativnyy Zhurnal -- Avtomatika, Telemekhanika, i Vychislitel'naya
Tekhnika, No 8, 1971, Abstract No 8B145 P)

Translation: There are well-known inverting NOT-OR elements for processing
information presented in the form of optical pictures; they contain an image
converter and an optical system for projecting the pictures on the input of
the converter. The NOT-OR element suggested here differs in that it has an
inverting packet, which is in the form of a mosaic photocathode covered with
a photoconductive layer and a semitransparent silver layer. The latter con-
sists of a silver coating, pieces of cesium, and a current-carrying material.
The packet is located at the input of the image converter, which is made in
the form of a focusing coil which has embedded inside its cylindrical shell
an illuminator and a layer of an electrical phosphor covered with a semi-
transparent silver coating. This makes it possible to simplify the element.
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USSR

UDC 547.825

IL'ICHEV, Yu. Ye., IL'ICHEV, I. Ye., RUKHADZE, Ye. G., and TERENT'YEV,
Moscow State University

"Obtaining Alkylmercaptoethylpyridines"

Abstract: A method was developed for obtaining alkylmercaptothylpyridines
(II) by alkaline decomposition of the salts of S-alkylisothiuronium in the
presence of vinylpyridine. This method assures high yield of the desired
product, but unfortunately produces a large number of S-alkylisothiuronium
salts.

By using 2-Vinylpyridine, thiourea, and benzyl chloride, a 47.4% yield of
benzylmercaptothylpyridine was obtained; similar results were obtained with
ethylmercaptoethyl-2-pyridine, using ethyl bromide instead of benzyl
chloride, and here the yield was 50%.

1/1

USSR

LINNIK, YU. V., Academician, RUKHIN, A. L.   UDC 519.281

"Convex Loss Functions in the Theory of Unbiased Estimates"

Moscow, Doklady Akademii Nauk SSSR, Matematika, Vol 198, No 3,
1971, pp 527-529

Abstract: The authors study unbiased estimates with minimal
risk; i.e., the estimates f satisfying $E_\theta f(x) = g(\theta)$, where $\theta \in \Theta$
are abstract parameters and $g(\theta)$ is a real function. The esti-
mates minimize the magnitude of the risk $R_\theta(f) = E_\theta W(f(x) - g(\theta))$,
where W is any positive, convex loss function. The authors
investigate the twice differentiable convex loss functions $W(u)$
and $W(0) = 0$. These satisfy the inequality $W(2u) \le CW(u)$ (Δ 2-
condition -- M. A. Krasnosel'skiy and Ya. B. Rutitskiy). It is
known that in this instance $W(u) \le C|u|^p$ and $|u| W'(u) \le KW(u)$ when
$K \le 1$. It is shown that if $f(x)$ is an unbiased estimate with mini-
mal risk corresponding to the loss function $W(u) = u^2$, then $f(x)$
under given conditions is also the unbiased estimate with minimal
risk for the given loss function W. The proof is given. The re-
sults can be applied to the case of monotonic, convex loss func-
tions. Orig. art.: ten formulas and six bibliographic entries.
1/1

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USSR

KLEBANOV, L. B., LINNIK, Yu. V., Academician, RUKHIN, A. L.,
Leningrad Department of the Mathematics Institute imeni V. A.
Steklov, Academy of Sciences of the USSR; Leningrad State Univer-
sity imeni A. A. Zhdanov

UDC 519.281

"Unbiased Estimates and Matrix Loss Functions"

Moscow, DAN SSSR, Vol 200, No 5, Oct 71, pp 1024-1025

Abstract: Let $(\mathfrak{X}, \mathfrak{A}, P_\theta)$, $\theta \in \Theta$ be a probability space with a family of
probability distributions on it. It is assumed that from the results
of observations $x \in \mathfrak{X}$ conforming to one of the laws P_θ, an estimate must
be made of the value of the given function $\gamma(\theta): \theta \to \mathfrak{R}_m$, where $\mathfrak{R}_m$ designates
the set of all square matrices of dimensionality $m \times m$ with real elements.
If γ^* is assumed as an estimate of the unknown value $\gamma = \gamma(\theta)$, then losses
are assigned by the matrix-value function $w(\gamma^*, \gamma) \in \mathfrak{R}_m$, assuming a relation
of order in set $\mathfrak{R}_m$ generated by the positive definiteness of the matrix
difference. The authors consider only functions $w(\gamma^*, \gamma)$ which are convex
with respect to γ^* at each value of γ. If $g(x)$ is an estimate for $\gamma(\theta)$
i. e., a measurable mapping $\mathfrak{X} \to \mathfrak{R}_m$, then its risk, corresponding to the loss

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function $w(\gamma^{*}, \gamma)$, is

$$R_{\theta}(g) = E_{\theta}w(g(x), \gamma(\theta)).$$

The estimate $f(x)$ is said to be *better* than $g(x)$ if for all $\theta \in \Theta$ the matrix $R_{\theta}(g) - R_{\theta}(f)$ is nonnegatively defined, and *rigorously better* than $g(x)$ if the given matrix differs from the zero matrix for at least one θ. The estimate $f(x)$ belonging to some class K of estimates of the function $\gamma(\theta)$ is said to be *optimum in this class* if it is better than any esti-mate $g \in K$. The authors consider the class K of all unbiased estimates with finite covariation matrix: i. e., estimates $f(x)$ for which

$$E_{\theta}f(x) = \gamma(\theta), \quad E_{\theta}f(x)f^{\tau}(x) < \infty$$

for all $\theta \in \Theta$ (here τ designates the sign of transposition). The esti-mate $f(x)$ which is optimum in the given class K is called an *unbiased estimate with minimum risk*. The unbiased estimate with minimum risk corresponding to the measure of quality generated by the loss function

$$w_{\iota}(\gamma^{*}, \gamma) = (\gamma^{*} - \gamma)(\gamma^{*} - \gamma)^{\tau}$$

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USSR

KLEBANOV, L. B. et al, DAN SSSR, Vol 200, No 5, Oct 71, pp 1024-1025

(covariation matrix) is said to be an *unbiased estimate with minimum covariation matrix*. The authors investigate the interrelation between unbiased estimates with minimum covariation matrix and those with minimum risk corresponding to the given loss functions $w(\gamma^*, \gamma)$. Bibliography of five titles.

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USSR

KAGAN, A. M., LINNIK, Yu. V., Academician, ROMANOVSKIY, I. V., and
RUKHIN, A. L.

"Sets With 'Self-Control'"

Abstract: In this investigation of the "self-control" of sets in the problem of successive evaluation of shift parameters in arbitrary loss functions, the parameter $\theta \in R^1$ in a standard system of direct measurements $x_i = \theta + \varepsilon_i$, $i = 1, 2, \ldots$, is considered, where the measurement errors ε_i are assumed to be random quantities with fully known distribution functions $F(x)$. The purpose of this article is thus to study successive estimation of the shift parameter θ in specified independent observations x_1, x_2, $\ldots$, distributed in accordance with the law $F(x - \theta)$. A formula is derived for the optimal invariant evaluate $\hat{\theta}$ of the parameter θ, and a theorem involving the errors ε_i subjected to hypernormal distribution and the derived formula is stated and proved. The authors are connected with the Leningrad Division of the V. A. Steklov Mathematical Institute.
1/1

USSR

RUKHIN, A. L.

UDC 519.281

"The Permissibility of Estimates of Maximum Likelihood"

Teoriya Veroyatnostey i Mat. Statist. Mezhved. Nauch. Sb., [Theory of Probabilities and Mathematical Statistics. Indepartmental Scientific Collection], 1970, No 3, pp 135-140, (Translated from Referativnyy Zhurnal Kibernetika, No 5, 1971, Abstract No. 5V150 by the author).

Translation: Absolute permissibility of estimates of the maximum likelihood of a univariate shift parameter is proven for a certain quality measure. An example is presented which denies this result in the case of a multivariate parameter.

1/1

USSR

LINNIK, Yu. V., RUKHIN, A. L., and STRELITS, Sh. I.

"Gamma Distribution and Partial Sufficiency of Polynomials"

Leningrad, Trudy Matematicheskogo Instituta im. Steklova; CXI: Teoreti-cheskiye Zadachi Matematicheskoy Statistiki, 1970, pp 40-51

Abstract: The article concerns repeated samplings of a given population of positive random quantities and the properties of partial sufficiency of linear statistics with respect to polynomials in percentages (in particular, proper-ties of the stability of regression) and certain other statistics. The authors derive nonlinear differential equations which are studied by means of new results of Sh. I. Strelits on the asymptotic behavior of solutions of nonlinear differential equations. A new characterization of gamma dis-tributions is obtained on the basis of this method.

The following theorem is proven:

"Let $F^{n*}(x)$ be the nth power of the convolution $F(x)$, absolutely continuous, and $\int_{0}^{\infty} x^k dF(x) < \infty$. Further, let $E_{\sigma}\left\{P_k\left(\frac{x_1}{\Sigma x_j}, \ldots, \frac{x_n}{\Sigma x_j}\right) \middle/ \sum_{1}^{\bullet} x_j\right\}$ not depend on δ

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USSR

LINNIK, Yu. V., et al, Trudy Matematicheskogo Instituta im. Steklova; CXI: Teoreticheskiye Zadachi Matematicheskoy Statistiki, 1970, pp 40-51

for some polynomial P_k of power $k < n$, such that the condition [remainder illegible]

$$F'(x) = A_0 x^{\rho-1} + A_1 x^{\rho} + \dots + (A_3 + 0(1)) \qquad (1)$$

is satisfied. If at least one of the following conditions is satisfied, then F(x) is a distribution function of the gamma distribution:

(a) the function $x^{-\rho} + x^{-\rho-1}$, -- where ρ is defined in equation (1) -- is not a solution of the equation

$$\sum_{p=1}^{k} \sum_{i_1+\dots+i_p=k} A_{i_1,\dots,i_p} y^{(i_1)} \dots y^{(i_p)} y^{k-p} = 0, \; n > k > 2, \qquad (2)$$

and the equation

$$\sum_{\substack{i_1+\dots+i_p=k \\ 1 \le p \le k}} A_{i_1,\dots,i_p} \left\{ \sum_{q=1}^{p} \prod_{\substack{j=1 \\ j \ne q}}^{p} \frac{\Gamma(\rho+i_q)\,\Gamma(\rho+\mu+i_q)}{\Gamma(\rho)\,\Gamma(\rho+\mu)} - p \prod_{j=1}^{p} \frac{\Gamma(\rho+i_j)}{\Gamma(\rho)} \right\} = 0 \qquad (3)$$

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USSR

LINNIK, Yu. V., et al, Trudy Matematicheskogo Instituta im. Steklova; CXI: Teoreticheskiye Zadachi Matematicheskoy Statistiki, 1970, pp 40-51

has no positive integral roots;

(b) $z^{-\ell} + z^{-\ell-1}$ is not a solution of equation (2), but equation (3) has positive roots s_1, s_2, ... s_v and coefficients with numbers s_1, ..., s_v of the polynomial $A_0 z^{-\ell} + \sum_{j=1}^{s_1} B_j z^{-(\ell+j)}$, where $B_j = A_j \Gamma(\rho + j)$ and the A_j defined in equation (1) coincide with the corresponding coefficients of the z^{-1}-degree series expansion of the function $A_0 \left(z - \frac{B_1}{A_0 \rho} \right)^{-\ell}$;

(c) $z^{-\ell} + z^{-\ell-1}$ is a solution of equation (2), the remaining conditions of (b) are satisfied, and, in addition, $B_2 = \frac{\rho+1}{2} \cdot \frac{B_1^2}{A_0}$.

3/3

USSR

RUKHIN, A. L.

"Successive Optimal Estimation of the Shift Parameter for Certain Sets"

Upravlyayemyye Sluchayn. Protsessy i Sistemy [Controlled Random Processes and Systems -- Collection of Works], Kiev, 1973, pp 287-304 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V147, by L. Gal'chuk).

Translation: The problem of optimal successive estimation of parameter θ is studied, when the sequence $x_i = \theta + \varepsilon_i$, $i = 1, 2, \ldots$ is observed, where $\theta \in R^1$, ε_i are independent, identically distributed quantities with known distribution and zero mean. The form of the optimal stopping moment is found (if such exists) for an invariant procedure in the regular case, when parameter θ has a one-dimensional sufficient statistics. In the case when ε_i has strongly symmetrical distribution and the loss function has a special form, the optimal moment of stopping of the invariant procedure is also found. Furthermore, the a posteriori Bayes estimates of parameter θ are presented for both of these sets of distributions.

1/1

USSR

RUKHIN, A. L., SAMSONENKO, S. V.

"On a Detection Procedure Which is Invariant Relative to the Intensities of Signal and Interference"

Abstract: A signal detection procedure is synthesized for Neumann-Pearson optimum detection of a signal with random phase against a background of interference when the signal is invariant relative to the amplitude A and the interference intensity σ. It is assumed that there are n independent samples $X(x_1; x_2; \ldots; x_j \ldots; x_n)$. The problem is to verify the hypothesis H_0 for which the observed samples x_j have Rayleigh distribution

$$P_0(x) = \frac{x}{\sigma^2} e^{-x^2/2\sigma^2}, \quad x \geqslant 0$$

1/2

USSR

for the alternative hypothesis that the samples have gener-
alized Rayleigh distribution ($\mu = A^2/\sigma^2$)

$$P_\mu(x) = \frac{x}{\sigma^2} \exp - \left(\frac{x^2}{2\sigma^2} + \mu \right) I_0 \left(\frac{x\sqrt{\mu}}{\sigma} \right), \quad x \geqslant 0,$$

where the positive values of A and σ are unknown. In terms
of the parameter μ, the hypothesis $H_0 : \mu = 0$, and the alterna-
tive H_1 $\mu > 0$. If $P_\mu(x)$ $(\mu \geqslant 0)$ is some density corresponding to
one of these hypotheses, then the density of the form $(1/\sigma)P_\mu(x/\sigma)$
also belongs to the same hypothesis for all positive σ. In
view of this invariance of the problem, the analysis is re-
stricted to a class of resolving functions which satisfy the
equality

$$\psi(x_1; x_2; \ldots; x_n) = \psi(\sigma x_1; \sigma x_2; \ldots; \sigma x_n).$$

Bibliography of twelve titles.

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USSR

UDC: 519.24

LEBEDEV, N. A., LINNIK, Yu. V., RUKHIN, A. L.

"Monotonic Convex Matrix Functions of Losses in Statistics"

Tr. Mat. in-ta AN SSSR (Works of the Mathematics Institute of the Academy of Sciences of the USSR), 1971, 112, ch. 1, pp 291-299 (from RZh-Kibernetika, No 12, Dec 71, Abstract No 12V328)

Translation: The form of monotonic and convex matrix functions is determined, and some of their uses as loss functions in mathematical statistics are indicated. Authors' abstract.

1/1

Translation: This article consists of three chapters, the first two of which are dedicated to the problem of estimating the shift parameter of a measure in a locally compact Abelian group. A measure of the quality of the estimate is introduced using a group of characters, and necessary and sufficient conditions for optimality of the estimate in a certain class are presented. Distributions are described for an additive group of real numbers, for which optimal estimates exist. These rules have density of the form

$$p(u) = C \exp\{-\alpha \operatorname{ch} \beta u\}, \quad \alpha, \beta > 0,$$

and their limits are the normal and rectangular rules. Theorems are established concerning characterization of the Gaussian measure in groups with the property of optimality or sufficiency of statistics $\sum_{1}^{n} x_j$ for the group parameter. Absolute permissibility of this estimate is proven for the case of the normal set. In the second chapter, the problem of estimation of the shift parameter is

studied as applicable to specific groups, the most important of which for applications is the group of rotations of a circle. Certain statistical properties of Mises law are studied and the corresponding estimate of the shift parameter $\arg (e^{ix_1} + \ldots + e^{ix_n})$ is analyzed.

In chapter 3 for groups without elements of order two it is shown that the quantities $\xi + \eta$ and $\xi - \eta$, where ξ and η are independent, are independent when and only when there is a compact subgroup, after factorization of which the distributions of ξ and η are normal. It is also shown that the components of Poisson's law in Abelian groups are Poisson components only if the initial group contains no elements of finite order other than two.

2/2

LINNIK, Yu. V., RUKHIN, A. L., STRELITS, Sh. I.

"Gamma Distribution and Partial Sufficiency of Polynomials"

Translation: A characteristic property of the gamma distribution is noted, consisting of independence of the quantity

$$E_\sigma \left\{ P\left(\frac{x_1}{\Sigma x_j}, \ldots, \frac{x_n}{\Sigma x_j} \right) \middle| \Sigma x_j \right\},$$

where $x_1, \ldots, x_n$ is a repeated sample from the general set with unknown scale parameter σ, while P is a certain polynomial from σ. This property allows statistical interpretation in terms of partial sufficiency of the statistics $\sum_1^n x_j$ for the scale parameter σ. The proof is based on determination of the positively defined solutions of equation

$$\sum_{p=1}^{k} \sum_{i_1+\ldots+i_p=k} A_{i_1,\ldots,i_p} y^{(i_1)} \ldots y^{(i_p)} y^{k-p} = 0,$$

1/2

to which the condition of independence from σ of this arbitrary mathematical expectation is reduced.

USSR

UDC 621.371.333

VYAL'TSEVA, E. Ye. and RUKINA, A. N.

"Investigating the Index of Refraction for Air in the 300 m Atmospheric Layer"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. Sekts. 2 (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses; Section 2--collection of works) "Nauka," 1972 pp 29-32 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10A352)

Translation: Results are given for the determination of the N profile at altitudes of 2-300 m for various meteorological conditions. From the obtained profiles, gradients of the refraction index g_n were determined. It is established that daily variations in the index of refraction are more clearly expressed in good weather. At altitudes of up to 25 m, critical refraction and superrefraction were observed. Layer 2, at 300 m, is characterized by higher refraction. Bibliography of two. A. L.

1/1

USSR

UDC: 533.9.07

ROSINSKIY, S. Ye., RUKHADZE, A. A., RUKHLIN, V. G., EPEL'BAUM, Ya. G.,
Physics Institute imeni P. N. Lebedev, Academy of Sciences of the USSR,
Moscow

"Injection of an Electron Beam Into a Plasma Contained by a Conductive
Shell"

Abstract: One of the most interesting effects which arises as a result of
injecting electron beams into a plasma is magnetic neutralization of the
beam due to induction of a plasma countercurrent. It is this effect which
enables transmission of superhigh currents through a drift space filled
with plasma. This paper investigates injection of a radially nonuniform
electron beam into a plasma contained by a conductive shell. It is found
that the perturbation of charge density is the same as in an unbounded
plasma. The fields and currents induced by the beam in the plasma con-
tained by an ideally conductive shell are not qualitatively different from
the fields and currents which arise in an unbounded plasma. An ideally
conducting shell does not cause any appreciable decompensation of the fields

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and currents in the plasma but only changes the quantitative data pre-
viously found for the case of an unbounded plasma. Thus, the spatial non-
uniformity of the beam induces a plasma countercurrent which partially
compensates for the magnetic field of the current throughout the entire
cross section of the beam. The authors thank D. D. Ryutov for discussing
the results of the work.

2/2

USSR

RUKHADZE, A. A.; RUKHLIN, V. G. (Lebedev Physics Institute of the USSR Academy of Sciences)

"Injection of a Relativistic Electron Beam into a Plasma"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki; July, 1971; pp 177-89

ABSTRACT:

The response of a plasma to injection of a low-density relativistic electron beam is investigated. It is shown that if $r_0 > c/\omega_p$, where r_0 is the beam radius and ω_p the plasma frequency, all plasma perturbations are localized in the region of the electron beam itself; all currents induced in the plasma tend to compensate the magnetic field of the beam, facilitating in this way its injection into the plasma. If the beam injection time $\tau > \tau_0 = \nu^{-1}(r_0\omega_p/c)^2$, where ν is the plasma electron collision frequency, then magnetic field compensation occurs at distances $z < z_0 = u\tau_0$ from the front of the beam, u being the directed electron velocity. Hence, in the case of a high-current electron beam, when the magnetic energy of the beam current exceeds the electron kinetic energy, easy injection is possible only in a dense plasma, providing $\omega_p > c/r_0$ and $\tau < \tau_0$.

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USSR   UDC 621.039

RUKHLO, V. P., and TOPIL'SKIY, L. N.

"Source of Thermal Neutrons With a Given Spatial Distribution in the IRT-MIFI Reactor"

Translation: An experimental setup is described for obtaining a vertical beam of thermal neutrons from a horizontal thermal column. The setup consists of a prism with a cavity and with a scatterer in this cavity. Prisms of graphite, lead, and paraffin with cavities of different dimensions were investigated. It is shown that the best material for the prism is paraffin, but the distribution of neutron flux is not symmetric. The best distribution is obtained in a graphite prism with a paraffin scatterer. The neutron flux in this case with a cavity 30 cm wide and 20 cm long is 10 times greater than in the case of a graphite prism without a cavity. With the aid of such a prism, one can obtain different distributions of neutron flux. The spatial distributions of neutron flux obtained can be represented as distributions from a plane source. Yu. S. Aborin.
1/1

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USSR   UDC   681.326.34

BUBNOV, A. I., ROMANKEVICH, A. M., RUKKAS, O. D., TOLPANOV, Yu. A., Kiev
Electronic Computer and Controlling Machine Plant

"A Device for Troubleshooting an Electrical Installation"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki,
1970, No 36, Soviet Patent No 288420, class 42, filed 14 Feb 69, published
3 Dec 70, p 156

Translation: This Author's Certificate introduces a device for trouble-
shooting an electrical installation. The device contains registers, input,
output and control modules, a comparison circuit, logic elements, a pulse
generator and a device for registration of electrical connections. As a
distinguishing feature of the patent, the device is simplified and speed
is increased by connecting the output of the input module to the input of
one register, and through a coincidence circuit to the input of the other
register. The second input of the coincidence circuit is connected to the
output of the control module, and the outputs of the registers are connected
to the inputs of the device for registration of electrical connections, the
comparison circuit and the output module. The outputs of the output
module are connected to the inputs of the input and control modules.

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USSR   UDC 621.396.6.013

ROMANKEVICH, A. M., RUKKAS, O. D., TOLPANOV, YU. A.

"Matrix Recorder of Galvanic Couplings"

USSR Author's Certificate No 291205, filed 30 Jun 69, published 10 Jun 71 (from RZh—Avtomatika, Telemekhanika i vychislitel'naya tekhnika, No 4, Apr 72, Abstract No 4A529P)

Translation: A matrix recorder of galvanic couplings is proposed which contains coordinate switching units and two triode matrices. There are 3 illustrations.

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1/2   044   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--AN AMPLIFIER OF SINGLE FREQUENCY LASER EMISSION -U-

AUTHOR-(04)-NIKASHIN, V.A., RUKMAN, G.I., SAKHAROV, V.K., TARASOV, V.K.

COUNTRY OF INFO--USSR

SOURCE--PRIBORY I TEKHNIKA EKSPERIMENTA, JAN.-FEB. 1970, P. 194, 195

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--RUBY LASER, OPTIC AMPLIFICATION, CRYSTAL OPTIC PROPERTY, LASER
    EMISSION COHERENCE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/1455   STEP NO--UR/0120/70/000/000/0194/0195

CIRC ACCESSION NO--AP0106211
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0106211
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESCRIPTION OF AN AMPLIFIER OF
SINGLE FREQUENCY RUBY LASER EMISSION WITH A LARGE AMPLIFICATION FACTOR
ACHIEVED BY TRIPLE PASSAGE OF THE BEAM TO BE AMPLIFIED THROUGH THE
AMPLIFIER CRYSTAL. A MAXIMUM AMPLIFICATION FACTOR OF 24 CAN BE ATTAINED
BY THIS AMPLIFIER. A BRIEF DESCRIPTION IS GIVEN OF THE SPATIAL
STRUCTURE AND THE DEGREE OF COHERENCE OF THE AMPLIFIED RADIATION.
 FACILITY: VSESOIUZNYI NAUCHNOLSSLEDOVATEL'SKII INSTITUT
OPTIKO-FIZICHESKIKH IZMERENII, MOSCOW,, USSR.

UNCLASSIFIED

Acc. Nr.: _AM 0105455_   Ref. Code: _UR 0000_

Meshcherskaya, A. V.; Rukhovets, L. V.; Yudin, M. I.; Yakovleva, N. I.

Natural Components of Meteorological Fields (Yestestvennyye sostavlyayushchiye meteorologicheskikh poley) Leningrad, Gidrometeoizdat, 1970, 199 pp (SL:2015)

TABLE OF CONTENTS:

REEL/FRAME
19880444

1/2

Acc. Nr.: __AM 0105455__

In the monograph main results of a statistical analysis of meteorological elements with the aid of the methods of expansion in natural orthogonal funcions are generalized.

A brief survey of modern works is given, in which the method of natural orthogonal functions was used. Much of the paper deals with the presentation of original studies of many meteorological elements with an analysis of their horizontal, vertical and temporal distribution. Discussion is given of this method as applied to a number of practical problems in meteorology and climatology, including the problems of hydrodynamical and statistical weather forecast.

As an enclosure to the monograph, one can find *The Atlas of Maps of Dispersions, Mean Values and Most Significant Natural Components of Basic Meteorological Elements.* Such an Atlas is published for the first time. It gives an idea of forms of variations in the atmosphere, their seasonal differences and other peculiarities of large-scale regularities.

The monograph and the Atlas could be used by specialists in the field of climatology, synoptical meteorology, aerology, and adjacent subjects, as well as by students who are interested in using the modern statistical methods in natural sciences.

REEL/FRAME
19880445

1/2   020   UNCLASSIFIED   PROCESSING DATE--16OCT70
TITLE--AMYLOIDOSIS IN MICE IN IMMUNIZATION WITH TWO ANTIGENS -U-

AUTHOR--RUKOSUYEZ, V.S.

COUNTRY OF INFO--USSR

SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, 1970, VOL 69,
 NR 5, PP 103-105
DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--MOUSE, PROTEIN, ANTIGEN, ALBUMIN, PHOSPHATASE, IMMUNIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0200   STEP NO--UR/0219/70/069/005/0103/0105

CIRC ACCESSION NO--AP0120898
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0120898

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DURING CONSECUTIVE ADMINISTRATION
TO MICE OF TWO DIFFERENT PROTEIN ANTIGENS (IN VARIOUS COMBINATIONS,
OVALBUMIN, HUMAN ALBUMIN, CASEIN, ACID PHOSPHATASE) AMYLOIDOSIS IN THE
SPLEEN DEVELOPS APPROXIMATELY DURING THE SAME PERIOD OF TIME AS IN
IMMUNIZATION WITH ONE ANTIGEN. IT IS SUPPOSED THAT THE NONSPECIFIC
ACTION OF LARGE DOSES OF ANTIGENS IS CONDUCTIVE TO THE DEPOSITION OF
AMYLOID.   FACILITY: INSTITUTE OF HUMAN MORPHOLOGY OF THE ACADEMY
OF MEDICAL SCIENCES OF THE USSR.

UNCLASSIFIED

USSR   UDC: 621.396.6:621.318

KONTOROVICH, L. I., TYUL'NIKOVA, V. I., KUKUNOV, L. N.

"Some Parameters of SHF Ferrites as Related to Technological Factors During Hot Pressing"

Elektron. tekhnika. Nauchno-tekhn. sb. Ferrit. tekhn. (Electronic Technology. Scientific and Technical Collection. Ferrite Technology), 1970, vyp. 1 (23), pp 11-16 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12V423)

Translation: An investigation was made of the technological singularities of hot pressing of SHF ferrites grades 4S411, 4S45 and 6S41, as well as the effect which basic technological factors have on density, microstructure and magnetic properties of ferrites. It was found in particular that increasing the pressing temperature from 1050 to 1200°C leads to a sharp increase in density, and also to an increase in the initial permeability and saturation induction, and to a reduction in coercive force. The results of the study gave a basis for selecting optimum conditions for hot pressing. The parameters of Y-circulators with hot-pressed ferrite inserts are given. Three illustrations, one table, bibliography of four titles. N. S.

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I/2   040   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--TUNABLE RECEIVER OF LONG WAVE INFRARED RADIATION -U-

AUTHOR-(03)-NAD, F.YA., PANKOV, V.G., RULEV, K.A.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, RADIOTEKHNIKA I ELEKTRONIKA, VOL 15, NO 2, 1970, PP
371-375
DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--IR RADIATION, PHYSICS LABORATORY INSTRUMENT, RECEIVER
CHARACTERISTIC, IR RECEIVER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1153   STEP NO--UR/0109/70/015/002/0371/0375

CIRC ACCESSION NO--AP0112255
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0112255

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. AN APPARATUS IS DESCRIBED, WHICH
OPERATES AS A SELECTIVE NARROW BAND TUNABLE DETECTOR OF INFRARED
RADIATION IN THE 25-300 MICROMETER RANGE AND ALSO, AS A WIDE BAND
"ELECTRON BOLOMETER" IN THE 300-2000 MICROMETER RANGE. IT CONSISTS OF
THREE BLOC UNITS: 1) THE HELLIUM CRYOSTAT WITH A LIGHT GUIDE, A
SUPERCONDUCTING SOLENOID, AND A PHOTOSENSITIVE ELEMENT; 2) A STAND FOR
ELECTRON INSTRUMENTS; AND 3) A MODULATOR.   ITS SENSITIVITY IS
RELATIVELY INDEPENDENT OF THE WAVE LENGTH FROM SEVERAL MILLIMETERS DOWN
TO 600 MICROMETERS. THE SENSITIVITY SPECTRAL CHARACTERISTICS OF THE
APPARATUS AT A MAGNETIC FIELD VALUE OF SIMILAR TO 22.5 KOE (AS RECORDED
BY A VACUUM MONOCHROMATOR WITH CHANGEABLE ECHELETTE GRATINGS WHICH
OPERATES IN THE 20-2000 MICROMETER RANGE) IS PRESENTED. IT HAS A
DEFINITE RESONANCE FORM WITH A RELATIVE 5 PERCENT HALF WIDTH. IT IS
CONCLUDED THE DESCRIBED RECEIVER IS HIGHLY SENSITIVE AND HAS A SMALL
INERTIA.   IN THE 25-300 MICROMETER RANGE THE APPARATUS HAS NARROW BAND
SENSITIVITY WITH A POSSIBILITY OF TUNING THE ENTIRE WAVE RANGE BY A
SIMPLE VARIATION OF CURRENT, AND CONSEQUENTLY MAGNETIC FIELD, IN A
SUPERCONDUCTING SOLENOID. WHEN SWITCHING IT ON A WEAK MAGNETIC FIELD (H
SMALLER THAN OR EQUAL TO 5 KOE) OR CUTTING OFF THE SOLENOID, IT OPERATES
AS A NONSELECTIVE DETECTOR SENSITIVE TO RADIATION WITH LAMBDA LARGER
THAN OR EQUAL TO 300 MUM WAVE LENGTH. A COMPARATIVELY SMALL RESISTANCE
OF THE RECEIVER ELEMENT (5-10 KOHM) MAKES IT POSSIBLE TO OBTAIN A SMALL
TIME CONSTANT, WHICH DETERMINES THE SPEED OF PHYSICAL PROCESSES IN A
CRYSTAL.

UNCLASSIFIED

USSR   UDC 621.384.3

NAD', F. Ya., PANKOV, V. G., RULEV, K. A.

"Tunable Receiver of Long Wave Infrared Radiation"

Abstract: An apparatus is described, which operates as a selective narrow band tunable detector of infrared radiation in the 25-300 micrometer range and also, as a wide band "electron-bolometer" in the 300-2000 micrometer range. It consists of three bloc units: 1) the hellium cryostat with a light guide, a superconducting solenoid, and a photosensitive element; 2) a stand for electron instruments; and 3) a modulator.

Its sensitivity is relatively independent of the wave length from several millimeters down to 600 micrometers. The sensitivity spectral characteristic of the apparatus at a magnetic field value of $\sim$ 22.5 koe (as recorded by a vacuum monochromator with changeable echelette gratings which operates in the 20-2000 micrometer range) is presented. It has a definite resonance form with a relative 5 percent half-width. It is concluded the the described receiver is highly sensitive and has a small inertia.

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USSR

NAD', F. Ya., et al., Radiotekhnika i Elektronika, Vol 15, No 2, 1970, pp 371-375

In the 25-300 micrometer range the apparatus has narrow-band sensitivity with a possibility of tuning the entire wave range by a simple variation of current, and consequently magnetic field, in a superconducting solenoid. When switching it on a weak magnetic field ($H \leqslant 5$ koe) or cutting-off the solenoid, it operates as a nonselective detector sensitive to radiation with $\lambda \gtrsim 300 \mu m$ wave length. A comparatively small resistance of the receiver element (5-10 kohm) makes it possible to obtain a small time constant, which determines the speed of physical processes in a crystal. Orig. art has: 3 figures.

2/2

Electromagnetic Wave Propagation

USSR

UDC: 621.396.677

ASHKONAZI, D. Ya., BELYAYEV, V. P., BRODULENKO, G. I., LOBANOV, N. P., RULEV, S. O.

"Starting Losses in SHF Dischargers"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific and Technical Collection. SHF Electronics), 1970, vyp. 9, pp 123-124 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12B98)

Translation: An experimental study was made of the power dissipated in the discharge as a function of the transmitter pulse duration for an electrodeless discharger with double dielectric walls. Measurements were taken on two different wavelengths in the decimeter band; the dischargers had a different height in each of these cases. The dissipated power was measured with an air calorimeter. The results show a high proportion of starting losses (up to half the dissipated power). This means that the process of growing electron concentration in the discharge continues considerably longer than the process of growing current determined by the wave impedance of the waveguide channel. Three illustrations, bibliography of two titles. N. S.

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RULEV Yu.K.

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The solution is applicable to a variety of physical problems which can be described by parabolic equations with movable boundaries. Extension of the solution to more complex bodies (an ellipsoid, a paraboloid, and a hyperboloid) is planned.

George, E. D., Yu. K. Rulev, G. F. Sipachev, and M. I. Yakushin. Experimental study of ablation boundary layer in specimens under simultaneous action of convective and radiative heat fluxes. MZhiG, no. 2, 1972, 25-29.

The ablation boundary layer in asbestos-reinforced plastic cylindrical specimens with a spherically blunted nose was studied in an air plasma jet produced by a high-frequency electrodeless discharge. The discharge generated a 37 mm diameter plasma jet at 1 kg/cm^2 pressure with Reynolds number of 100 and a 30 m/sec velocity. The plasma, boundary layer, and specimen emission spectra were recorded simultaneously on a photographic plate by means of an optical system including an ISP-51 prismatic spectrograph. Plasma jet interaction with the studied material was recorded by motion picture camera at a speed of one frame/second. A sharp boundary was detected between the specimen and the boundary layer. The visible emission spectrum of the latter exhibited characteristic lines of the elementary constituents of the original material. The boundary layer emission intensity in the 3838-6483Å spectral range was comparable to or higher than that of the plasma. The temperature profile across the boundary layer (Fig. 1) was determined near the

Acc. Nr.
AA0108178

Abstracting Service:
CHEMICAL ABST. 6-7b

Ref. Code
UR 0482

135535k Powder wire for surfacing. Vernik, V. S.; Ruleva, A. E.; Kliman, T. G.; Razikov, M. I.; Korolev, N. V.; Kulishenko, B. A. U.S.S.R. 261,147 (Cl. B 23k), 06 Jan 1970, Appl. 14 Aug 1968; From Otkrytiya, Izobret., Prom. Obraztsy, Tovarnye Znaki 1970, 47 (4), 146-7. Powder wire for surfacing consisted of a steel casing and a powd. core contg.: graphite 0.24–2.6, ferromanganese 22.5–7, Fe powder 1.9–5.2, W 14–16%, and a steel strip the remainder. •MSCL

REEL/FRAME

19891844

USSR

UDC 621.314.61(C88.8)

GUZOVSKIY, I.G., RULLIS, YA.YA.

"A-C Voltage Sensor"

Translation: A device is proposed for checking and protection of the source of power supply for electronic apparatus. The protective device operates in the case when the pulsation magnitude of voltage at the output of a rectifier [vypryamitel'] exceeds a safe level. The device contains an input transformer; the circuit is charged by voltage of the secondary winding of this transformer across a TsD [expansion unknown] and a resistor. Voltage from the circuit is fed across a reference stabilitron to the input of an amplifier and later to the final protective element. The primary winding of the input transformer is connected to the output busbars of the controlled rectifier across a separation circuit. During an emergency regime, pulsation of the rectified voltage increases and leads to an increase of the voltage in the circuit. When this voltage exceeds the breakdown voltage of the stabilitron, a turn-on of the final protective element of the device takes place. 1 ill. L.R.

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USSR

UDC   536.46

MERZHANOV, A. G., RUMANOV, E. N., KHAYKIN, B. I., Moscow

"Multizone Burning of Condensed Systems"

Moscow, Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki, No 6, Nov/Dec 72, pp 99-105

Abstract: In the general case, combustion of condensed systems takes place in stages, and the combustion front is multizonal. Investigation of a two-zone model has shown that one of the zones predominates in multizone burning. The velocity of the front is equal to that of the predominant zone, but when there is a change in the parameters of the system, there may be a switch in the predominant role from one zone to another, as well as merging and splitting of zones. A generalization of the two-zone model with possibilities for transition to analysis of a complex multizonal front is considered, and it is shown that for a front with two reactions (in the condensed phase and in the gas) and dispersion, only three variants of the heat-releasing zones are possible (two three-zonal and one two-zonal). All possible types of relations are found for the burning rate as a function of the depth of dispersion.

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RUMANOVA, I. M., GANDYMOV, O., BELOV, N. V.

"The Crystalline Structure of Veatchite and Its Relationship to the Structure of p-Veatchite"

Abstract: Veatchite (A-veatchite) and p-veatchite are two natrual strontium borates with identical chemical composition $4SrO \cdot 11B_2O_3 \cdot 7H_2O$ and similar physical properties: they differ in the sizes of unit cells and spatial groups. The structures of both minerals consist of identical borax layers $Sr_2[B_5O_8(OH)]_2 \cdot B(OH)_3 \cdot H_2O$, with each unit cell (both in p-veatchite and in veatchite) intersecting two such layers, coupled with hydrogen bonds. The differences in the structures result from different mutual placement of the layers: if we assume the first layers of p-veatchite and veatchite to correspond, the second layer of veatchite will be a mirror reflection of the second layer of p-veatchite in the plane perpendicular to the c axis (plane of location of hydrogen bonds).

1/1

1/2   022   UNCLASSIFIED   PROCESSING DATE--04DEC70
TITLE--STRENGTH AND ELASTICITY OF BIRCHWOOD TREATED AND DENSIFIED WITH
  AMMONIA -U-
AUTHOR-(03)-BERZINS, G., ROCENS, K., RUMBA, A.

COUNTRY OF INFO--USSR

SOURCE--HOLZTECHNOLOGIE 1970, 11(1), 48-52

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--WOOD, AMMONIA, CONSTRUCTION MATERIAL, COMPRESSIVE STRENGTH,
  BENDING STRENGTH, ELASTICITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605018/D03 STEP NO--GE/0150/70/011/001/0048/0052

CIRC ACCESSION NO--AP0140832
                         UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--04DEC70
CIRC ACCESSION NO--AP0140832
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE COMPRESSIVE, SHEAR, AND
   BENDING STRENGTHS, AND THE MODULUS OF ELASTICITY IN TENSION, AND
   COMPARISON ALONG THE GRAIN AND IN SHEARING AND BENDING WERE EXAMD. FOR
   BIRCHWOOD PLASTICIZED WITH NH SUB3 AND MECH. DENSIFIED. THE RESULTS,
   STATISTICALLY CALCD. AND EXPRESSED BY REGRESSION EQUATIONS, ARE
   CORRELATED TO PERMIT A SIMPLIFIED CALCN. OF STRUCTURAL ELEMENTS OF
   PLASTICIZED WOOD.

UNCLASSIFIED

1/2   025   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--MECHANISM OF THE FORMATION OF DIMETHYLSILAZINE POLYMERS -U-

AUTHOR-(02)-RUMBA, G., MAY, L.

COUNTRY OF INFO--USSR

SOURCE--LATV. PSR ZINAT. AKAD. VESTIS. KIM. SER. 1970, (1), 90-5

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ORGANOSILICON COMPOUND, AMMONIA, METHANE, THERMAL EFFECT,
POLYMERIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1999/1868   STEP NO--UR/0464/70/000/001/0090/0095

CIRC ACCESSION NO--AP0123656
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0123656   UNCLASSIFIED   PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DIMETHYLSILAZANE (I, A MIXT. OF CYCLIC TRIMERS AND TETRAMERS) WAS HEATED WITH 0.5-10 WT.PERCENT KOH AT 200-385DEGREES. EVOLUTION OF NH_3 WAS FOLLOWED BY EVOLUTION OF CH_4 YIELDING I POLYMERS WHICH WERE ULTIMATELY CROSSLINKED. CH_4 EVOLUTION INCREASED WITH TEMP. AND DURATION OF HEATING AND DETERMINED THE DEGREE OF POLYMN. A MECHANISM WAS PROPOSED POSTULATING FORMATION OF AN ACTIVE INTERMEDIATED FROM A TRIMER AND A TETRAMER, WITH LOSS OF ACTIVE INTERMEDIATED FROM A TRIMER AND A TETRAMER, WITH LOSS OF NH_3 BY DISPLACEMENT WITH THE OH AND SUBSEQUENT POLYMN. THROUGH THE SI ATOMS WITH LOSS OF CH_4.   FACILITY: INST. NEORG. KHIM., RIGA, USSR.

USSR

DREYMAN, Ya. A., and RUMBA, G. Ya., Izvestiya Akademii Nauk Latviyskoy SSR, Seriya Khimicheskaya, No 4, 1971, pp 435-438

At a molar ratio I/II > 1, NH_3 evolved in the reaction, while at I/II < 1 Me_2SiCl_2 evolved. At the close contact of the reacting substances in melts, the evolution of NH_3 and Me_2SiCl_2 was impeded. It was possible only at the temperature of 300°, at which cross-linked products formed that were insoluble in benzene, toluene, and xylene. On melting of I + II at 150-60°, compounds with a low degree of condensation and dimethylcyclosilazanes formed. In the presence of an organic solvent such as toluene, there was no close contact between the reacting substances, so that a part of the NH_3 that was frees escaped from the reaction mixture without participating in the polycondensation and without forming NH_4Cl. The organic solvent contributed to the separation of NH_4Cl from the reaction products. The amount of NH_3 that evolved and the reaction rate depended on the amount of the solvent. When the amount of solvent was cut in half, the evolution of NH_3 increased by 35-40% in the reaction carried out with unchanged quantities of I and II.

2/2

USSR

UDC 678.84'747.5:678.85:541.27

DREYMAN, Ya. A., and RUMBA, G. Ya., Institute of Inorganic Chemistry,
Academy of Sciences Latvian SSR

"Mechanism of the Reaction Between Octamethylcyclotetrasilazane and the
Dichloride of Methylphosphonic Acid"

Abstract: The reaction of octamethylcyclotetrasilazane (I) with the dichloride
of methylphosphonic acid (II) was carried out at various ratios of I to II in
melts at 150-60° and 300° and also (cf. Rumba and Dreyman, Izv. AN Latv. SSR,
Ser. Khim., 736, 1969) in boiling toluene. The reaction proceeded according
to the following general scheme:

$$/Me_2SiNH/_4 + MeP(O)Cl_2 \rightarrow Me_2SiCl \qquad \overset{O\!\!\uparrow\!\!Me}{\underset{Me_2SiNSiMe_2}{\searrow}} \qquad + NH_4Cl$$

$$\underset{NSiMe_2-N-}{\big|} \qquad\qquad (sic.)$$

1/2

USSR

BLIZNYUK, N. K., et al., USSR Author's Certificate No 337384, filed 31 Oct 69, published 2 Jun 72

C_5H_{11}, Cl, 80-5/3, 1.5246, 1.2049, 48; C_6H_{13}, Cl, 87-90/3, 1.5160, 1.1730, 44.1; C_7H_{15}, Cl, 108-13/3, 1.5220, 1.1243, 34.3; C_8H_{17}, Cl, 130-2/3, 1.5140, 1.1290, 56.9; $C_{10}H_{21}$, Cl, 137-40/2, 1.5060, 1.0705, 31.1; C_6H_{11}, Cl, 103-7/2. 1.5580, 1.2867, 24.5; Ph, Cl, 100-3/2, 1.6258, 1.4261, 915.; $4\text{-}ClC_6H_4$, Cl, 133-5/2, 1.6298, 1.5085, 78.5; $2,5\text{-}Cl_2C_6H_3$, Cl, 146-52/31, 1.6382, 1.6272, 47; $4\text{-}tert\text{-}BuC_6H_4$, Cl, 146-9/2, --, --, 91.2; Ph, Br, 136-8/1, 1.6998, 1.9168, 70.7; Br, Cl, 120-2/2, 1.6158, 1.3702, 80. Compounds I are used as intermediates in synthesizing various organophosphorus compounds used as pesticides, fuel additives and lubricant additives.

2/2

USSR   UDC 678.84/85.057:543.422.4:541.67

DREYMAN, YA. A., and RUMBA, G. YA.

"Reaction of Methylphosphonic Acid Dichloride With Metal Substituted Octamethylcyclotetrasilazane"

Riga, Izvestiya Akademii Nauk Latviyskoy SSR, Seriya Khimicheskaya, No 2, 1973, pp 197-203

Abstract: It has been established that butyl lithium and butyl sodium react with octamethylcyclotetrasilazane in boiling toluene and in the presence of styrene, leading to the substitution of the hydrogen in the Si-NH group and to the opening of the Si-N bond as well. The reaction of this metal substituted cyclotetrasilazane with $CH_3P(O)Cl_2$ proceeds with contraction of the cycle. In this way cyclic oligomers containing tertiary nitrogen atom have been obtained. The individual compounds have been isolated by vacuum distillation, their structures were confirmed by IR- and PMR-spectra.

1/1

USSR

UDC 541.614:546.28'171'131'183.057:935.343-19

DREYMAN, YA. A., and KIRPA, G. YA., Institute of Inorganic Chemistry, Acad. Sc.,
LatvSSR, Order of Labor Red Banner Riga Polytechnical Institute

"Reaction of Octamethylcyclotetrasilazane With Phosphorus Trichloride and
Oxychloride"

Riga, Izvestiya Akademii Nauk Latviyskoy SSR, Seriya Khimicheskaya, No 1, 1972,
pp 89-93

Abstract: The reaction of octamethylcyclotetrasilazane (I) with phosphorus
trichloride (II) and oxychloride (III) was studied with, and without extraction
of the reaction mixture with NH₃. The reaction was carried out in boiling
toluene. Under the action of (II) and (III), (I) breaks at the silicon-nitrogen
bond forming silicon-chlorine and phosphorus-nitrogen bonds. The products
obtained are viscous materials, easily hydrolyzed in air; they show IR maxima
at 429-503, 678, and 3358 cm⁻¹, characteristic of P-Cl, Si-Cl and P-N bonds.
Depending on the ratio of the reagents, ammonia or dimethyldichlorosilane are
liberated in the reaction. Six membered rings are postulated for the reaction
products, on the basis of IR spectral data. When the reaction was carried out
in presence of trimethylchlorosilane -- a chain terminating agent -- the
products formed had molecular weights of 1100-1300. Hydrolytic stability of
1/2

USSR

DREYMAN, YA. A. and KURBA, G. YA., Izvestiya Akademii Nauk Latviyskoy SSR,
Seriya Khimicheskaya, No 1, 1972, pp 89-93

the products was studied, showing that the compounds containing phosphoryl
groups are somewhat more stable than those obtained from (I) and (II).

2/3

3

USSR   UDC 616.988.75+616.2-036.11-022.6]-097.3

SHADRIN, A. S., YAKUBENKO, A. A., MALYSHEVA, A. M., NAYKHIN, A. M., GROMOVA, M. I., RUMEL', N. B., and SMORODINTSEV, A. A., All-Union Scientific Research Institute of Influenza, Leningrad

"The Effect of Serum Antiviral Inhibitors on Resistance to Influenza and Acute Respiratory Diseases"

Abstract: A study conducted on about 1000 men, women, and children living in Leningrad and Murmansk and on 129 volunteers revealed that the presence of beta-inhibitors in the blood significantly reduces the proportion of clinically severe forms of influenza and parainfluenza (a fall by a factor of 2.5), decreases the frequency of severe forms of experimental influenza (down by a factor of 2), and slows the development of immune response to vaccination with highly attenuated influenza strains. Beta-inhibitors do not exert an anti-infectious effect, that is, they do not prevent contraction of the diseases. Their protective value stems from their antitoxic effect, that is, reduction of the severity of influenza and parainfluenza without hindering the body's specific reaction to the infection.

1/1

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Acc. Nr.   Abstracting Service: Ref. Code
AT0107992 CHEMICAL ABST.   4P0020

125148x Hydrogen atom and a conformal group. Elmer,
Yu. B. (Novosibirsk. Gos. Univ., Novosibirsk, USSR). Dokl.
Akad. Nauk SSSR 1970, 191(1), 64-6 [Phys] (Russ). A
dynamic equation is derived in 3 stages for the direct expression
of Schroedinger's equation for the H atom in conformal group
theory.   R. Hardbottle

EB

REEL/FRAME
19891572

Rumi, D.S.

STAS 59568 c.73

XV-4. STUDY OF THE SURFACE STRUCTURE OF EPITAXIAL SILICON USING THE PROCE-DURE OF SLOW ELECTRON DIFFRACTION

By using the slow electron diffraction procedure on the (111) surface of epitaxial silicon grown in the chloride process, the superstructure of Si (111)-5 x 5 was detected. It was demonstrated that its occurrence arises from the presence of chlorine. It is characteristic that the 5 x 5 superstructure is not observed on the silicon surface grown from a melt, including samples etched with hydrogen chloride.

The chlorine content in the silicon is determined to a significant degree by the growth conditions, and it correlates with the time of existence of the 5 x 5 superstructure. Estimates were made of the effect of certain crystallisation parameters on the chlorine capture by the epitaxial layers of silicon during the growth process.

- 222 -

1/2   036
TITLE—PROPAGATION OF SHOCK WAVES IN A MEDIUM OF DECREASING DENSITY —U—

UNCLASSIFIED

PROCESSING DATE—30OCT70

AUTHOR-(02)-GUREVICH, L.E., RUMYANTSEV, A.A.

CCUNTRY OF INFO—USSR

SOURCE—ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58,
NR 4, PP 1395-1399
DATE PUBLISHED————70

SUBJECT AREAS—PHYSICS

TOPIC TAGS—SHOCK WAVE PROPAGATION, SHOCK WAVE FRONT, SPECIFIC DENSITY,
SHOCK WAVE INTERACTION, STAR

CONTROL MARKING—NO RESTRICTIONS

DOCUMENT CLASS—UNCLASSIFIED
PROXY REEL/FRAME—1988/1567   STEP NO—UR/0056/70/058/004/1395/1399

CIRC ACCESSION NO—AP0106313
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0106313
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FRONT OF A SHOCK WAVE
PROPAGATING IN A MEDIUM OF DECREASING DENSITY IS UNSTABLE WITH RESPECT
TO PERTURBATIONS, THE WAVELENGTHS OF WHICH ARE MUCH SMALLER THAN THE
INHOMOGENEITY LENGTH AND IN PARTICULAR SMALLER THAN THE HEIGHT OF A
NONUNIFORM ATMOSPHERE. AS A RESULT THE WAVE FRONT SEPARATES INTO SMALL
REGIONS, THE DIMENSIONS OF WHICH IS SLIGHTLY SMALLER THAN THE
INHOMOGENEITY LENGTH. THESE SMALL REGIONS MOVE IN VARIOUS DIRECTIONS,
COLLIDE AND PRODUCE A DIFFUSION PATTERN OF THE SPREADING WAVE FRONT.
IN THE CASE OF A STAR THE TIME OF INSTABILITY DEVELOPMENT IS MUCH
SMALLER THAN THE TIME FOR DIFFUSION OF THE FRONT TO THE SURFACE. IT IS
POINTED OUT THAT AN EXPLOSION OF SUCH DURATION MAY OCCUR THAT THE
TRAILING EDGE OF THE SHOCK DISTURBANCE CANNOT OVERTAKE THE LEADING EDGE
BEFORE THE LATTER LEAVES THE SYSTEM AND THERE WILL NOT BE ENOUGH TIME
FOR THE RIEMANN SHOCK WAVE TO BE PRODUCED. .   FACILITY: FIZIKO
TEKHNICHESKIY INST. IM. A. I. IOFFE, AN SSSR.

AA6052676

UR 0482

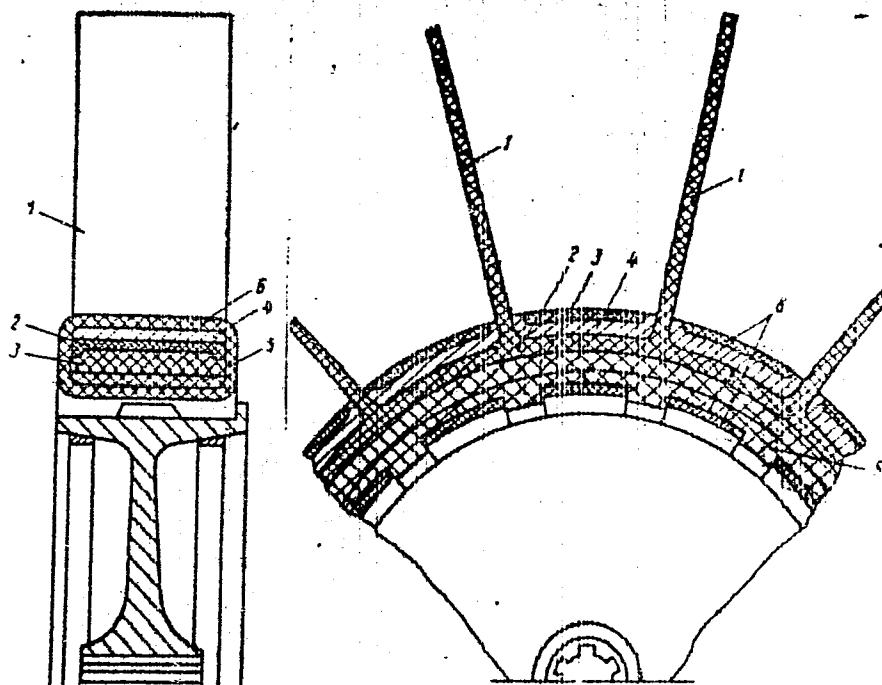Soviet Inventions Illustrated, Section III Mechanical and General,
Derwent, /-70

243136 AXIAL COMPRESSOR, WORKING WHEEL where the
blades are placed on the power glass fibre
ring 3 with springed plate 4 fixed to the rim in the
longitudinal slots of the threads made of glass
fibres 6. This improves the blade (fixing)
durability.

10.4.67 as 1166291/24-6.P.V.MALYUTIN & A.F.RYMIANSEV
(26.9.69) Bul 16/5.5.69. Class 27c. Int.Cl.F 04c.

Malyutin, P. V.; Rumyantsev, A. F.

19821442

/8

AA0052676

19821443

Power, Turbine, Engine, Pump

USSR   UDC: 62-235.5

MALYUTIN, P. V., GUNYAYEV, G. M., VORONTSOV, I. A., RUMYANTSEV, A. F.,
RARDINA, N. P., STEPANENKO, N. D., KARIMBAYEV, T. D., KISELEV, Yu. A.,
GORSHKOV, L. A.

"A Turbine Blade"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,
No 21, Jul 72, Author's Certificate No 344168, Division F, filed 31 Aug 70,
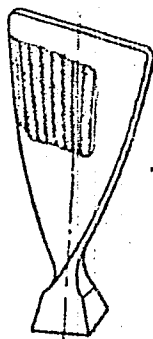published 7 Jul 72, p 135

Translation: This Author's Certificate introduces a turbine blade for an
axial compressor made of a laminar composition material. As a distinguish-
ing feature of the patent, the rigidity and vibration strength are increased
by making the blade from alternating layers of glass and carbon fiber
fillers oriented relative to the longitudinal axis of the blade, 34-45%
of the fiberglass-filled layers being oriented at angles from 0 to $\pm 15°$,
while 5-15% of the fiberglass-filled layers are oriented at angles from
± 75 to $90°$, 20-30% of the carbon fiber-filled layers are oriented at angles
from 0 to $\pm 15°$, and 20-30% of the carbon fiber-filled layers are oriented
at angles from ± 45 to $\pm 60°$.

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(5)

USSR

MALYUTIN, P. V. et al., USSR Author's Certificate No 344168

2/2

UNCLASSIFIED   PROCESSING DATE--13NOV70

TITLE--CONTINUOUS ALKYLATION OF PHENOL IN THE PRESENCE OF BENZENESULFONIC
ACID ON INDUSTRIAL APPARATUS -U-

AUTHOR-(05)-TEMIRGALIYEV, T.G., MITROFANOV, M.G., BOBYLEV, V.V., DEREKH,
P.A., RUMYANTSEV, A.G.

COUNTRY OF INFO--USSR

SOURCE--NEFTEPERERAB. NEFTEKHIM. (MOSCOW) 1970, (5), 20-1 (RUSS)

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--AKLYLPHENOL, BENZENE, SULFONIC ACID, INDUSTRIAL PRODUCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/1076   STEP NO--UR/0318/70/000/005/0020/0021

CIRC ACCESSION NO--AP0134765

UNCLASSIFIED

272   006

IRC ACCESSION NO--AP0134765   UNCLASSIFIED   PROCESSING DATE--13NOV70
BSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BY CONTINUOUS AS COMPARED WITH
PERIODIC ALKYLATION, THE PRODUCTION OF ALKYL PHENOLS WAS INCREASED FROM
50-60 TO 90-180 KG-HR PER M PRIME3 REACTION VOL., PHOH CONVERSION TO
SMALLER THAN OR EQUAL TO 98PERCENT, THE COMPN. AND COLOR OF ALKYLATION
PRODUCTS WAS CONST., AND THE PROCESS COULD BE READILY CONTROLLED. THE
CONTINUOUS PROCESS AND ELIMINATION OF WATER WASHING OF THE ALKYL PHENOLS
PRODUCED FOR PREPN. OF ADDITIVES HAD HIGH ECONOMIC EFFICIENCY.
FACILITY: NEFTEPERERAB. ZAVOD, VOLGOGRAD, USSR.

UNCLASSIFIED

USSR   UDC: 621.391.81

RUMYANTSEV, A. I.

"On the Question of Determining the Dimensionality of the Space
of Distinctive Features in the Multiple-Alternative Problem of
Signal Identification"

V sb. Materialy Nauch.-tekhn. konf. Leningr. elektrotekhn. in-t
svyazi. Vyp. 1 (Materials of the Scientific and Technical Con-
ference of Leningrad Electrical Engineering Institute of Com-
munications--collection of works, No 1), Leningrad, 1971, pp
163-165 (from RZh-Radiotekhnika, No 3, Mar 72, Abstract No
3A54)

Translation: An investigation is made of the effect which
averaging the covariation matrices has on the number of dis-
tinctive features significant for signal separation in the
case of optimum reduction of the dimensionality of the space.
Resumé.

1/1

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1/2   014   UNCLASSIFIED   PROCESSING DATE--13NOV70
TITLE--SOLID PHASE FORMATION DURING THE THERMAL DECOMPOSITION OF METHANE
   IN A HYDROGEN ATMOSPHERE -U-
AUTHOR-(03)-GORDON, M.D., LAVROVSKIY, K.P., RUMYANTSEV, A.N.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(6), 1289-91 (CHEM)

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--THERMAL DECOMPOSITION, METHANE, HYDROGEN, PYROLYSIS, CHEMICAL
   REACTOR, PARTICAL SIZE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1206   STEP NO--UR/0020/70/191/006/1289/1291

CIRC ACCESSION NO--AT0134880
                        UNCLASSIFIED

CIRC ACCESSION NO--AT0134880   UNCLASSIFIED   PROCESSING DATE--13NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EFFECTS OF INPUT RATE AND TUBE DIAM. ON C FORMATION IN THE PYROLYSIS OF CH_4 NEGATIVE H AT 1400-800DEGREES IN AL_2O_3 FLOW REACTORS WERE STUDIED. AS THE INPUT RATE WAS REDUCED THE RATES OF C DEPOSITION AND C_2H_2, MEC TRIPLE BOND CH, AND CH TRIPLE BOND CC TRIPLE BOND CH FORMATION ROSE SHARPLY, REACHING AT 15-30 M-SEC FLAT MAX. REFLECTING EQUIL. BETWEEN RATES OF FORMATION AND GROWTH OF PARTICLES IN THE GASEOUS PHASE AND THEIR DIFFUSION TO THE WALLS. AS THE TUBE DIAM. WAS INCREASED FROM 1.1 TO 2.7 MM AND, AT LOW CH_4 CONCNS., TO 5.0 MM, THE RATE OF C DEPOSITION REMAINED UNCHANGED, BUT AT GREATER THAN OR EQUAL TO 16-18PERCENT CH_4 CONCNS. IN 5 MM TUBES IT ROSE APPRECIABLY, DUE TO FORMATION OF C PARTICLES NOT ONLY ON THE WALLS IN THE GASEOUS PHASE WHERE, WITH THE INCREASING SUPERSATN., THE CRIT. PARTICLE SIZE AND ASSOCD. FREE ENERGY CHANGE WERE REDUCED AND THE PROBABILITY OF FORMATION OF PARTICLES OF THE CRIT. SIZE WAS INCREASED.   FACILITY: INST. NEFTEKHIM. SIN. IM. TOPCHIEVA, MOSCOW, USSR.

UNCLASSIFIED

PROTASOV, Yu. V., RUMYANTSEV, A. P.

"Multiple-Layer Thin-Film Structures With Negative Resistance"

Translation: The paper presents the results of a study of thin-film multi- layered MSDM strucutres (M is metal, S is semiconductor and D is dielectric), as well as simpler structures produced by the method of thermal evaporation in a vacuum using metallic Ni, Al, Cu, and copper-aluminum alloy as metals, Te as the semiconductor, and SiO and CaF_2 as the dielectrics. Regions of differential negative resistance were observed on current-voltage curves of S- and N-types. Resumé.

1/1

USSR

UDC: 621.317.7.087.92-932

LYSENKO, A. P., KUDRYAVTSEV, V. B., RUMYANTSEV, R. I., KUDRYAVTSEV, F. I.

"A Method of Converting Alternating Harmonic and Square Voltages and Currents to Frequency"

USSR Author's Certificate No 252738, filed 26 Feb 68, published 11 Feb 70 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 11, Nov 70, Abstract No 11A168 P)

Translation: This Author's Certificate introduces a voltage-to-frequency converter which utilizes modulation of the spectral characteristics of masers. A peculiarity of optical masers (which are based on use of the phenomenon of optical double resonance in alkali metal vapors) is asymmetry of the resonance line, which makes it possible to convert and measure small and ultrasmall alternating voltages and currents with high precision. It is known that the frequency spectrum emitted by a spin system has a finite width. This is why quantum and nuclear devices such as quantum magnetometers with double optical resonance may have several distinct resonance frequencies, depending on the direction and magnitude of the vector of magnetic field intensity. To improve sensitivity and provide for preadjustment to the maximum spectral density of the resonance curve, it is proposed that a method be used which involves

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LYSENKO, A. P. et al., USSR Author's Certificate No 252738

correcting the level of the constant component of the magnetic field in the quantum magnetometer zone or phase in the feedback circuit. In this regard, the level of the voltage to be converted may be considerably below the cutoff voltage of the best semiconductor rectifiers. One illustration. V. M.

2/2

USSR

UDC 51.621.391

RUMYANTSEV, B. YA., SOLIYEV, I. U.

"Structure of Noise Proof Codes in a Three-Valued Symmetric Alphabet"

V sb. Vopr. tekhn. i mat. obespech. ETsVM Setun' and Minsk-22. Vyp. 1 (Problems of the Hardware and Software for the Setun' and Minsk-22 Digital Computers. Vyp. 1--collection of works), Dushanbe, 1971, pp 42-52 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V302)

Translation: The algorithm for decoding a ternary Hamming code is presented.

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USSR   UDC 613.63+615.9-057+612.014.46

RUMYANTSEV, G. I., and KOZLOVA, T. A., Chair of General Hygiene, First Moscow
Medical Institute imeni I. M. Sechenov

"Some Results of Research on the Combined Effects of Toxic Substances on the
Body"

Moscow, Gigiyena i Sanitariya, No 10, 1971, pp 36-40

Abstract: While there is substantial information available concerning the ef-
fects of various toxic substances and physical factors acting in isolation,
comparatively little has been done on the effects of the combined action of
several toxic substances or of a toxic substance plus one or more physical
factors. Some recent work, briefly described in the article, dealt with the
effects of: various combinations of toxic substances on animals and combina-
tions of these substances with high ambient temperatures; low concentrations
of sulfur dioxide and carbon monoxide/nitric oxide; sulfur dioxide combined
with high ambient temperatures; benzene and acetone, toluene, and epichloro-
hydrin; low concentrations of fumes of solvents, saturated and unsaturated
hydrocarbons combined with sulfur dioxide and high temperatures. A great
deal of attention is now focused on the effects of toxic agents on general
resistance (as determined by the phagocytic activity of leukocytes, an

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USSR

RUMYANTSEV, G. I., and KOZLOVA, T. A., Gigiyena i Sanitariya, No 10, 1971, pp 36-40

important index of natural immunity), the mutagenic activity of toxic chemicals (as measured by chromosome aberrations), chronic action of low concentrations of chemical compounds at maximum permissible concentrations, and the effects of toxic substances entering the body through different routes.

2/2

Public Health, Hygiene and Sanitation

USSR   UDC 613.68:613.644

RUMYANTSEV, G. I. and MEKHEL'SON, D. A., First Moscow Medical Institute imeni
I. M. Sechenov and Scientific Research Institute of the Hygiene of Water
Transport, Moscow

"Effects of Noise and Vibration on Sailors Under Conditions Prevailing on
Ships"

Abstract: Among the many factors which make life on ships different from
life on hand, noise and vibration seem to be especially important, because
the crew is exposed to these factors both at work and during rest and because
in the machine section the intensity level in the low and medium frequency
ranges exceeds the limit permitted on industrial plants by 10-25 decibels.
Blood serum tests performed on 86 sailors on eight ships revealed a statis-
tically significant increase, among machine shop personnel, in glucose con-
centration on the 15th day and in beta lipoproteins on the 30th day of
cruising. In a similar group of machine-servicing sailors who were given
daily doses of 5 mg of thiamine and 50 mg of nicotinic acid admixed in their
food, plasma glucose and beta lipoprotein concentrations were essentially
the same as among deck crew members who served as controls. Although the
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USSR

RUMYANTSEV, G. I. and MEKHEL'SON, D. A., Gigiyena i Sanitariya, No 9, 1971, pp 25-27

authors refrain from drawing a definitive conclusion on the basis of the results of this investigation, they suggest that these vitamins may be of beneficial value in protecting sailors from the adverse effects of continuous noise and vibration.

2/2

UNCLASSIFIED   PROCESSING DATE--18SEP70
TITLE--SOLUTION OF CRITICAL PROBLEMS BY SOLVING NONLINEAR EQUATIONS -U-

AUTHOR-(02)-SHULEPIN, V.S., RUMYANTSEV, G.YA.

COUNTRY OF INFO--USSR

SOURCE--AT. ENERG. USSR 28, 61-2 JAN 1970

DATE PUBLISHED-------70

SUBJECT AREAS--NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--GROUP THEORY,   NUCLEAR REACTOR TECHNOLOGY,   NONLINEAR
   EQUATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1933/1309   STEP NO--UR/0089/70/028/000/0061/0062

CIRC ACCESSION NO--AP0054193
                     UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--18SEP70

CIPC ACCESSION NO--AP0054193

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A MULTIGROUP METHOD (WITH
ARBITRARY NUMBER OF ENERGY GROUPS) FOR REACTOR CRITICALITY CALCULATIONS
IS DESCRIBED CONSIDERING THE PROPERTIES OF THE MEDIUM AS CONTINUOUS
COORDINATE FUNCTIONS.

UNCLASSIFIED

AN0012919

UR9027

AUTHOR-- RUMYANTSEV, I., DIRECTOR, SCIENTIFIC-RESEARCH INSTI-
TUTE OF CHEMICAL MACHINE CONSTRUCTION /SRICM/

TITLE-- THE EFFECT OF RESEARCH

NEWSPAPER-- VECHERNYAYA MOSKVA, JANUARY 13, 1970, P 2, COLS 2-5

ABSTRACT-- THE ARTICLE IS A VERY BRIEF REVIEW OF THE ACTIVITIES
OF THE SRICM. THE INSTITUTE IS THE LEADING ORGANIZATION IN THE
FIELD OF MACHINE DESIGN FOR CHEMICAL INDUSTRY. IT GUIDES THE TECHNO-
LOGICAL POLICIES AND COORDINATES THE EFFORTS OF OTHER INSTITUTES
AND PLANTS. THE FOLLOWING STAFF MEMBERS OF THE INSTITUTE ARE
MENTIONED AS ACHIEVERS-- R. KAZAKOV, S. GDALIN, V. SEMENOV,
YU. KIPRIANOV, YE. CHUVPILO, AND V. ZAVAROV. ALL ARE MEMBERS OF THE
COMMUNIST PARTY.

19571886

RUMYANTSEV, I. S.

"On Nonerosion Velocities in the 'Near Wake' Beyond a Water Pipe Laid on the Bottom of a Water Barrier"

Sb. nauch. tr. Mosk. gidromelior. in-t (Collection of Scientific Works of Moscow Hydromelioration Institute), 1970, No. 2, pp 140-149 (from RZh-Mekhanika, No 12, Dec 71, Abstract No 12B965)

Translation: The results of an experimental study of a channel flow in sections where it runs over a cylindrical body lying at the bottom of the flow perpendicular to the direction of flow are discussed. These experiments conducted on eroded models were compared with the results obtained in wind tunnels. The results of determining the nonerosion velocities in the "near wake" are discussed and empirical relationships are derived between the magnitudes of the coefficient of overload and the intensity of the turbulence. The hypothesis of Ts. Ye. Mirtskhulavy was achieved with respect to determining the nonerosion velocities in eddies of local erosion arising in nonstreamline bodies. V. S. Altunin.

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RUMYANTSEV, P. F.

cement minerals

THE FORMATION AND STRUCTURAL TRANSFORMATIONS OF CEMENT MINERALS

JPRS 5509
23 May 72

Conference in Leningrad

The progress of cement technology, which has permitted our country to
go into first place in the world in the production of cement, is stipulated
to a considerable degree by the development of investigations of processes
of the formation and structural transformations of cement minerals. Those
investigations form the theoretical basis of the technology of cements and,
in addition, contribute to the development of such scientific disciplines as
crystal chemistry, mineralogy, geochemistry, chemical kinetics, etc.

The All-Union conference held on 15-17 November 1971 in Leningrad
was devoted to questions of the mechanism and kinetics of the formation of
cement minerals, the crystal chemical characteristics of their structure,
and their physicochemical properties. The conference was organized by the
Department of Physical Chemistry and Technology of Inorganic Minerals, the
Institute of Chemistry of the Silicates imeni I. V. Grebenshchikov of the AS
USSR, the Leningrad Technological Institute imeni Lensovet and the "Gipro-
tsement" (All-Union State Scientific Research and Planning Institute of the
Cement Industry). Participating in its work were about 300 persons, both
scientists of various specialties and production men from 25 cities of our
country. Examined in 70 reports were basic problems relating to anhydrous
materials and also the phase forming in the process of hydration and harden-
ing of cements; the principal crystal chemical characteristics of cement min-
erals, their structural transformations, processes of the formation of miner-
als, phase equilibria, the kinetics and mechanism of the formation and hydra-
tion of minerals, the influence of impurities on those processes, and struc-
ture formation during hardening.

In a report on structural and crystal chemical characteristics of
minerals N. V. Belov examined the role of silicon atoms in the process of

USSR   UDC   621.319.4.002.5

RUBINA, N. N., RUMYANTSEV, N. M.

"A Device for Marking Flat Capacitors"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki,
1970, No 33, Soviet Patent No 285113, class 21, filed 23 Jun 69, published
29 Oct 70, p 58

Translation: This Author's Certificate introduces a device for marking flat
capacitors. The unit contains a disc transporter, a cam distributing shaft,
a stereotype block, marking elements in the form of elastic cushions, a
mechanism for pickup of the ink and transfer to the stereotype block, and
a drive mechanism. As a distinguishing feature of the patent, productivity
is increased and marking is improved by fitting the device with two coaxially
arranged discs carrying diametrically located spring-loaded marking elements
supporting forks connected to levers which rest on the cams of the dis-
tributing shaft. The stereotype block is accommodated in the gap between
the discs. The axis of symmetry of the stereotype block and the axis of
symmetry of the capacitors being transported are located on a circle on
which the marking elements travel.

1/1

ЛА0043426‾ *Rumyantsev, A. F.*

·UR 0482

1-70

Soviet Inventions Illustrated, Section I Chemical, Derwent,

232080   POLYMER-CEMENT SUSPENSION suitable for
          the formation of protective coatings on
metals, ceramic article or glass, or for glueing,
consists of (in parts by wt); portland cement
10-50, polymethylphenylsiloxane resin 10-80,
organic solvent for the resin 5-75, water 5-25
and optionally, a filler (mica, asbestos, oxides
of chromium or zinc, etc). Suitable organic
solvents include lower alcohols (methanol, ethanol
etc), acetone, dioxane, or the like. A thorough
mixing of the components results in the formation of
a suspension of hydrated cement in a soln. of the
resin in the organic solvent. To form a
continuous coating, the suspension is applied
onto the article to be protected, and subjected to
thermal treatment at 80-250°C for 3-24 hrs. The
water-absorption of the coating after 24 hrs. is

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11.5%; the absorption of benzene 4-7%; maximum
weight loss at 200°C not more than 20%; dielectric
constant 2-4; dielectric loss 0.03-0.003;
electric resistance $3-10^{12}$ ohm. cm; breakthrough
voltage 13 kv/mm. 1.4.67. as 1144785/29-33,
LYUTYI, V.P. et al. I.V. Grebenshchikov Silicate
Chemistry Inst. (19.8.69) Bul. 36/28.11.68. Class
80b, Int. Cl. C 04b.

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Vasil'yeva, I. B.

Institut Khimii Silikatov imeni I. V. Grebenshchikova

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ON THE EXAMPLE OF TYPHOID CULTURES THE AUTHORS DEMONSTRATED THE POSSIBILITY OF USING COLORIMETRIC METHOD OF DETERMINATION OF DRY WEIGHT FOR ANALYSIS OF BACTERIAL POPULATIONS. IN THE SUGGESTED MODIFICATION THE METHOD IS CHARACTERIZED BY HIGH SENSITIVITY AND PRECISION, ADEQUATE REPRODUCIBILITY; IT IS ALSO WELL COMPARABLE WITH THE DRY HEAT METHOD. WIDE APPLICATION OF THE METHOD IN EXPERIMENTAL AND TECHNICAL MICROBIOLOGY IS RECOMMENDED.

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COLORIMETRY OF DRY WEIGHT OF BACTERIAL CULTURES.
REPORT I. DETAILS OF THE METHOD

V. G. Chalenko, I. K. Volodina, S. N. Permyantseva

The authors present the experimental results to ascertain the applicability of colorimetric method of determination of dry residue of tissue homogenates (Bailey a. Meymandi-Nejad, 1961) for corresponding analysis of S. typhi cells. Assessment of details of the method demonstrated the principal possibility of applying colorimetric procedures for analysis of bacterial biomass.

D. M.

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